

REMARKS

Claims 1-8, 13-14, 16-22, 25-27, 30, 32-37, 39, 41-42, 45-46, and 49 are canceled without prejudice or disclaimer. Withdrawn claims are: 9-12, 15, 23-24, 28-29, 31, 38, 40, 43 - 44, 47-48, 50-55, 71, 85 and 98.

Claims that applicant specifically discusses below which are pending but not withdrawn include claims 56-70, 72-84, and 86-97. Claim 56 is amended.

Background

On March 30, 2006 an interview was held with the Examiner to discuss the merits of the application. In that interview, the Examiner indicated his willingness to advance prosecution towards allowance claims that: (1) are directed to the overall two stage process, and (2) recite a clarity value to link molding parameters to the advantageous clarity or haze values achieved in the practice of the process parameters of the invention. Such amendments were made in the prior Amendment. Independent claims 56, 72, and 89 each recite steps (e) and (f) which recite, respectively, the reheating and blow molding of a preform into a container. Furthermore, values are recited in claim 56 and 72 (and all claims dependent upon such claims) to clearly define the favorable haze/thickness ratio that is made possible by application of the process molding parameters of this invention. The claims are fully supported by the specification.

Office Action

The recent Office Action mailed July 12, 2006 rejected the pending claims. Claims 71, 85, and 98 were withdrawn as restricted, and restriction of these three claims is not opposed. Applicant thanks the examiner for pointing out this issue.

However, essentially all of the pending claims were rejected as obvious under 35 USC Section 103, using various combinations of references. Applicant strongly traverses this rejection, as to claims 5670, 72-84 and 86-97. The pending claims are not disclosed, and are not rendered obvious by any combination of the cited references. By way of this document, an amendment is made to claim 56, to recite a more narrow range of MFI.

NON- OBVIOUSNESS

Claims 56-58 and 64-70 are rejected as unpatentable over Sato in view of Valyi and as combined with Oas (3-way obviousness challenge). With regard to the three-way obviousness challenge of Sato/Valyi/Oas, the Office Action suggests the following statements that are challenged herein applicants:

Incorrect Hypothesis 1: It would be obvious to provide a wall thickness of 3.6 mm as taught by Valyi to a parison in the process of Sato.

Incorrect Hypothesis 2: Valyi shows actual examples of polypropylene (PP) parisons.

Incorrect Hypothesis 3: Calculations and/or presumptions made upon values recited in Oas could result in a suggested mold fill rate of about 4-14 g/sec, in a 3-way combination of these three references.

Incorrect Hypothesis 4: Oas teaches a haze of 2-8%. Sato teaches a wall thickness of 0.1-0.2 mm. Then, if one combines some of the values (measurements) of the Sato bottles with some of the reported values (measurements) of the Oas bottles, then you can calculate a theoretical number of 0.25-2% per mil which represents a hybrid theoretical bottle made by combining the attributes of two different bottle measurements from two different patents, which actually apply to two different bottles.

Incorrect Hypothesis 5: A container obtained by the process of Sato in view of Valyi, and further in view of Oas will have the claimed haze value properties.

Incorrect Hypothesis 6: It would have been obvious for a person of skill in the art to have used routine experimentation in combining Sato/Valyi/Oas together, to arrive at the claimed invention.

The above hypotheses are not factually correct, as shown explained below.

The Office Action admits and it is undisputed that:

(1) At least one element of the claimed invention (i.e. mold fill rate of greater than 5 g/sec) is not taught or expressly disclosed by the combination of Sato and Valyi.

This feature can be found *only* by the theoretical calculation of Hypothesis 3 above.

(2) None of the containers described in any of the three references reveal the claimed haze to thickness ratio of less than 0.4 percent haze/mil. Hypothetical 5, above attempts to obtain such a value by using measured values from one container of one patent, and applying them to another unrelated different container which has different properties, and is described in another unrelated patent.

(3) None of the references teach a Melt Flow Index (MFI) value for the polymer in the range of "between about 13 and about 50 grams/10 minutes", as provided in claims 56-70 (or "about 13-35 grams/10 min", as in claims 72-88; or "between about 13 and about 35" for claims 89-98) and in the context of this invention. The JP 60-127336 reference does little more than set forth the facts that such MFI resins exist in blow molding, and applicant has never challenged that fact. Sato, the primary reference cited, teaches MFI of only 7.0, in example 1, which is well below all of the claimed MFI ranges in all of the claims.

Claims 59-63 are rejected in a 3-way rejection involving Sato/Valyi/Oas. Of course, these references do not teach nucleating agents, and therefore an effort is made to find yet another reference. Schmidt teaches DBS nucleating agents, which are known in the art generally, for providing clarification of plastic articles. Thus, these claims are rejected in a 4-way obviousness rejection, namely: Sato/Valyi/Oas/Schmidt.

Claims 72-73, 78-84 and 86-88 are rejected in a 3-way obviousness rejection of JP 60-125627 (hereafter "JP") in view of Valyi and Oas (JP/Valyi/Oas), for essentially the same reasons described above.

Claims 74-77 and 89-97 are rejected under a 4-way obviousness rejection, for JP/Valyi/Oas/Schmidt, for similar reasons.

The Pending Claims Are Not Obvious

Claim 56-58 and 64-70 are not obvious.

Sato does not teach an MFI value of 13-35. Sato does not teach a mold fill rate of greater than 5 g/s. Sato does not teach a perform of 2-4 mm thickness.

Sato does not teach a container with a haze/thickness ratio of less than 0.4.

Thus, Sato is missing 4 features of the claimed invention of claim 56.

To remedy this deficiency, the Office Action combined Sato with Valyi. But, Valyi does not even recommend Polypropylene (PP) at all! Valyi does not add anything to Sato, and clearly does not teach or render obvious the invention.

Valyi actually is directed MAINLY TO PET (POLYETHYLENE TEREPHTHALATE). Valyi deals "mainly" with PET:

The method of the present invention deals with the preparation of oriented hollow articles of moldable organic plastic material, **mainly poly (ethyleneterephthalate) polymers (PET)**, by injection molding
Valyi patent, column 4, lines 15-19 (emphasis supplied).

Valyi discusses crystallization in PET in column 6, line 66. Valyi talks about different types of PET, and the effect upon crystallization temperature. He mentions PP once, when "talking" theoretically about crystallization. However, none of the examples or claims of Valyi are directed to the use of PP. Instead, the examples and discussion of Valyi, with only one exception, is devoted exclusively to the use of PET, which is well known in the art and is not the subject of this invention at all.

Valyi also fails to suggest an MFI of 13-35. Valyi fails to suggest or teach a mold fill rate of 5 g/s. This is admitted in the Office Action.

There is no *prima facie* case of obviousness in the combination of Sato and Valyi. The elements of the claimed invention are not found, even in the combination of Sato and Valyi.

One of skill in the art would not be motivated to look to the teachings of a PET reference, Valyi, to solve the problems or inadequacy of Sato. Further, the parison in Valyi of 3.6 mm is believed by applicants to be a PET parison, not a polypropylene (PP) preform. A PET parison is different, and there is no correlation at all between a PET parison and PP preform. In fact, the invention is directed to solving some of the difficulties and problems associated with using PET. A person of skill in the art would not look to combine these references.

There is no motivation stated in Sato or Valyi that would indicate a reason to change the wall thickness of Sato to a wall thickness of an unrelated polypropylene perform, used in a different process. There is no motivation to alter the thickness of Sato. Further, we do not even know what thickness Sato proposes, as he has not disclosed such facts. In fact, Sato did not reveal or learn anything about thickness.

The combination of Valyi and Sato is not obvious. Valyi's teachings relate almost exclusively to PET – not to PP. Sheppard Declaration, para. 10. Valyi teaches that cooling rate at the injection step is what determines final bottle clarity --- and that is not true for polypropylene ("PP"). . Sheppard Declaration, para. 10. Thus, it appears to me that those of skill in the art would recognize that the teachings of Valyi are directed to PET, not PP. PET performs must be largely amorphous to blow properly and to have good clarity. . Sheppard Declaration, para. 10. To prevent crystallization, the material is rapidly quenched from above its melting point and through its glass transition temperature. Those of skill in the art, however, would know that the glass transition temperature of PP is about 0 degrees C, whereas the glass transition temperature of PET is very different, i.e. about 75 degrees C. It is impractical to rapidly quench PP below its glass transition temperature in an industrial process. Even if it could be done, it would not solve the issues and challenges of using PP, since the issue here is related to shear during injection --- and not due to crystallinity. Sheppard Declaration, para. 10. Further, PP performs typically have about 50% cryatallinity by weight, whereas PET performs would be less than about 10% crystalinity by weight in the orientable section. This is a *big* difference. Further, Valyi does not teach fill rate as claimed, nor does

Valyi teach haze levels as claimed. Sheppard Declaration, para. 10. For these

reasons, it would not be expected or obvious for a person of skill in the art to combine the teachings of Valyi with Sato.

Therefore Hypothesis 1 and 2 above are not factually supported by the references.

The combination of Sato/Valyi is MISSING ALL the following features:

- 1) MFI value of 13-35;
- 2) Mold fill rate of greater than 5 g/s; and
- 3) Container with a haze/thickness ratio of less than 0.4.

To remedy this deficiency, the Office Action looks to the Oas reference to fill this gap, but this reference adds little if anything to the issue. Oas is directed to polypropylene, but does not supply the missing features. First, Oas does not disclose an MFI value of 13-35, to the best of applicant's knowledge. Further, the calculations made in Hypothesis 3 above are not factually correct, because there is no motivation to alter or change Sato/Valyi to adopt yet another reference and its teachings.

The "Theoretical Hybrid Container"
Does Not Prove Obviousness

Finally, hypothesis 4 above is not correct, as none of these three references teaches a container that provides a haze/thickness ratio of less than 0.4. Oas teaches a haze of 2-8%, but this is achieved only by operating at an extremely slow injection speed. Oas teaches an injection time of 3-10 seconds per unit, which is very slow. Sato on the other hand, teaches a wall thickness of 0.1-0.2 mm. But, neither reference teaches a bottle with a haze of 2-8% and also a wall thickness as indicated. To

construct such a hypothetical, one must combine some of the values (measurements) of the Sato bottles with some of the reported values (measurements) of the Oas bottles. This still does not produce any teaching of a bottle or container having both characteristics.

With regard to the combination of Oas and Sato, this suggested combination would be technically incompatible. Sheppard Declaration, para. 11. Oas teaches a composition stretch ratio of 5.76, whereas Sato teaches 14. Sheppard Declaration, para. 11. The performs (parisons) for the two processes are incompatible, and therefore, it would not be obvious for a person of skill in the art to combine the teachings of Oas with the teachings of Sato, and it would be recognized that the teachings are not compatible. Sheppard Declaration, para. 11.

Even if one can calculate a theoretical number of 0.25-2% per mil which represents a "*hybrid theoretical*" bottle made by combining the attributes of two different bottle measurements from two different patents, there is no such teaching by either reference. Nothing expressed in either reference would motivate a person of skill in the art to combine these features, and absent some motivation to combine expressly stated in the reference, there can be no obviousness. Also, no one, including the applicant, Sato, Valyi, Oas, or anyone else, has ever seen such a "hybrid theoretical bottle" that has been constructed by picking and choosing attributed from unrelated references, and combining them. Such a combination is hindsight analysis, and only made possible by reading the present specification. That is, by looking at the claimed invention, one can in hindsight, construct the invention. But, only by improper hindsight analysis can one

construct such a theoretical prior art bottle, which in fact has never existed. The invention is not obvious to one of skill in the art.

The Invention

A discovery has been made here that is not obvious, and which presents unexpected results. That is, a set of pre-defined processing "windows" (ranges) have been discovered that, *when combined together, and taken as a whole*, afford processing speeds for the manufacture of preforms from PP that have not been achieved in the past. None of the prior art has achieved the results shown by the invention.

In the invention of this application, processing "windows" for variables of perform sidewall thickness, polymer MFI, and injection rate were discovered only after significant and extensive engineering research and development work. Sheppard Declaration, paragraph 12. When processing windows for each of these three variables are employed, it leads to exceptional and desirable PP bottles having low levels of haze, and at high production rates. Sheppard Declaration, paragraph 12. The prior art does not disclose such a process, as claimed in the above referenced application for patent. Sheppard Declaration, paragraph 12. If the prior art could address the current industry needs, and if it did disclose the processing windows of this invention, there would be no need to engage in the current research and development efforts being expended in the industry. Sheppard Declaration, paragraph 12. The prior art does not disclose or render obvious the invention of this application.

Further, there is no evidence that the cited references point towards *any motivation* for a person of skill in the art to adopt the specific and previously unidentified

claimed range(s) of the invention, to achieve such unexpected and synergistic results.

Absent some express teaching in the references to suggest the combination of these three specific ranges, there can be no legal obviousness.

Hypothesis 5 above is not correct. That is, it would not have been obvious for a person of skill in the art to use routine experimentation in combining Sato/Valyi/Oas together, to arrive at the claimed invention. The mere fact that it requires three separate references to even approach the elements of the claimed invention speaks to the nonobviousness of the invention.

Two Stage Process Versus One Stage Process

Valyi, Oas, and Sato teach processes of 1-stage injection stretch blow molding, not 2-stage. In 1-stage injection stretch blow molding, the parison formed in the injection step is cooled only to the point that is necessary to remove it from the injection tooling. Sheppard Declaration, para. 13. The center of the thickness [core] of a parison formed by this process is significantly warmer than the surface, and the core temperature is dependent upon the wall thickness of the preform as well as the rate at which the polymer is injected into the mold cavity. Sheppard Declaration, para. 13. Polymer temperature determines the ease of stretching the material, and thus preform thickness and injection rate have a profound effect on the final wall thickness distribution of the final container in 1-stage injection stretch blow molding. Sheppard Declaration, para. 13. In true 2-stage injection stretch blow molding, as in the invention of this application, the exterior region of the preform wall is always warmer than the core after reheating—which is the opposite situation from 1-stage processes. Sheppard

Declaration, para. 13. Thus, for this reason as well it is not obvious to adapt or combine the teachings of Valyi, Oas, and Sato to achieve the invention.

A Showing of Unexpected Results Defeats Obviousness

In this case, there is not a *prima facie* case of obviousness, as all the elements of the invention have not been located in the prior art. But, even if such a *prima facie* case were to be found, applicants may rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range:

"The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant need only show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range" to defeat a finding of obviousness *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g).

In this instance, the Applicants have made a firm showing of both: (1) teaching away of the claimed ranges by the prior art; and (2) criticality and/or unexpected results of the claimed range(s). It is requested that the Declaration of Shawn Sheppard be considered, and also the previously submitted Declaration of Bernard Vermeersch.

Obviousness is defeated when the applicant has completely answered in rebuttal by showing (1) the prior art teaches away from the claimed invention, and (2) there are new and unexpected results relative to the prior art. See, *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004). Both a teaching away, and newly unexpected results are present in this instance.

Obviousness is absent, as shown by the factual evidence submitted to the Patent Office Examiner.

Claims 59-63 include a nucleating agent, and these claims are not obvious. The 4-way rejection is legally insufficient, and there is no stated motivation for combining these 4 references to reconstruct the invention.

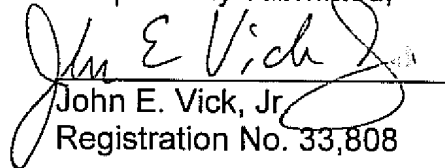
Claim 72 adds more narrow limitations, and therefore also is patentable, along with its dependent claims. Claim 89 adds a specific nucleating agent of dimethyl dibenzylidene sorbitol, and this is not apparent or obvious by any teaching in the prior art. Thus, the dependent claims 90-97 also are allowable.

The Schmidt reference adds little more than a teaching of nucleating agent, and the combination of the previously mentioned references with Schmidt does not render obvious the claims. Likewise, the JP reference is only a brief abstract showing a resin for injection stretch blow molding. None of the other features of the invention is apparent in the JP abstract disclosure.

Fee Authorization: In the event that there are additional fees associated with the submission of these papers, Applicant hereby authorizes the Commissioner to withdraw those fees from our Deposit Account No. 04-0500.

Extension of Time: In the event that additional time is required to have the papers submitted herewith for the above referenced application to be considered timely, Applicant hereby petitions for any additional time required to make these papers timely and authorization is hereby granted to withdraw any additional fees necessary for this additional time from our Deposit Account No. 04-0500.

Respectfully submitted,


John E. Vick, Jr.
Registration No. 33,808

MILLIKEN AND COMPANY
920 Milliken Road, M-495
Spartanburg, SC 29303
Telephone (864) 503-1383
Facsimile (864) 503-1999